

DOCKET NO: 292331US0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
THOMAS GESSNER, ET AL. : EXAMINER: B.E. MCDOWELL  
SERIAL NO: 10/584,631 :  
FILED: JUNE 26, 2006 : GROUP ART UNIT: 1624  
FOR: METHOD FOR PREPARING PHTHALOCYANINES

APPEAL BRIEF

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal from the Final Rejection of the claims dated March 16, 2009.

I. REAL PARTY IN INTEREST

The real party in interest is BASF SE.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and their assignee are not aware of any appeals or interferences which will directly affect or be directly affected by or having a bearing on the Board's decision in this appeal.

### III. STATUS OF THE CLAIMS

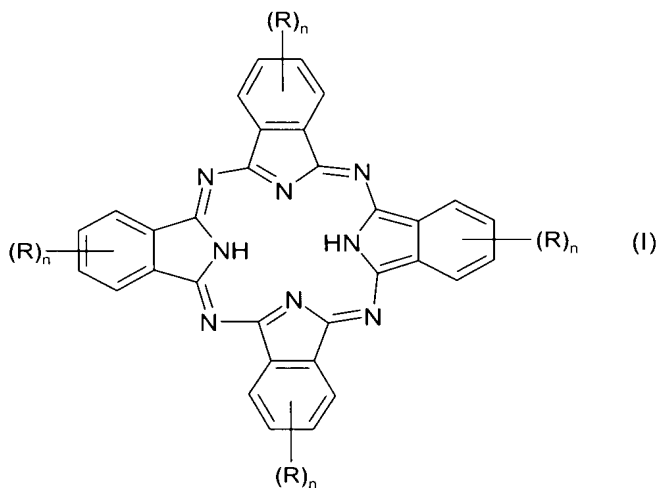
Claims 1-17 are pending in this application, and are appealed herein.

### IV. STATUS OF AMENDMENTS

No amendments to the have been filed subsequent to the mailing of the Final Rejection on March 16, 2009.

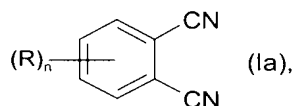
### V. SUMMARY OF THE CLAIMED SUBJECT MATTER

As set forth in Claim 1, the present invention relates to a process for the preparation of a metal-free phthalocyanine of formula I {see the specification at page 1, lines 1-9}



the process comprising,

converting an ortho-phthalodinitrile of the formula Ia {see the specification at page 1, lines 10-13}



to the metal-free phthalocyanine of formula I {see the specification at page 1, lines 1-9}  
in an inert solvent {see the specification at page 1, line 14} with a boiling point of at least  
120°C (at standard pressure) in the presence of ammonia {see the specification at page 1,  
lines 14-15} and an alkali metal hydroxide {see the specification at page 1, lines 23-24},

wherein, in formula I or Ia, the variable n can adopt values of 1, 2, 3 or 4 {see the  
specification at page 1, line 17},

wherein in formula I or Ia, the R radicals denote a five- or six-membered saturated  
heterocyclic ring comprising nitrogen {see the specification at page lines 17-19},

wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen is  
bonded

via a ring nitrogen atom to the benzene ring {see the specification at page 1, lines 19-  
21},

wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen  
can, optionally, comprise one or two additional nitrogen atoms or an additional oxygen or  
sulfur atom {see the specification at page 1, lines 19-21}, and

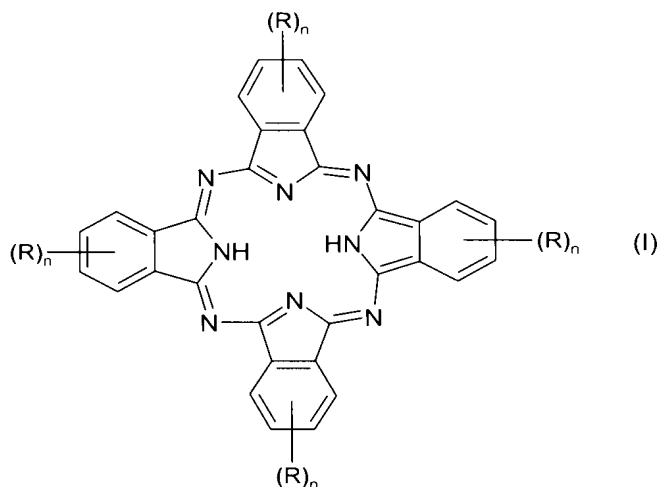
wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen  
can be, optionally, substituted by one or two C<sub>1</sub>-C<sub>8</sub>-alkyl groups {see the specification at page  
1, line 19}.

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether Claims 1-8 and 11-17 are unpatentable as under 35 U.S.C. §103(a) as obvious over Branch et al. in view of Tamura et al.
2. Whether Claims 9 and 10 are unpatentable as under 35 U.S.C. §103(a) as obvious over Branch et al. in view of Tamura et al., Padi et al. and Rintelman et al.

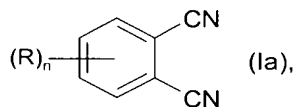
## VII. ARGUMENT

The present invention relates to a process for the preparation of a metal-free phthalocyanine of formula I



comprising:

converting an ortho-phthalodinitrile of the formula Ia



to the metal-free phthalocyanine of formula I in an inert solvent with a boiling point of at least 120°C (at standard pressure) in the presence of ammonia and an alkali metal hydroxide,

where

in formula I or Ia, the variable n can adopt values of 1, 2, 3 or 4,

in formula I or Ia, the R radicals denote a five- or six-membered saturated heterocyclic ring comprising nitrogen,

the five- or six-membered saturated heterocyclic ring comprising nitrogen is bonded via a ring nitrogen atom to the benzene ring,

the five- or six-membered saturated heterocyclic ring comprising nitrogen can, optionally, comprise one or two additional nitrogen atoms or an additional oxygen or sulfur atom, and

the five- or six-membered saturated heterocyclic ring comprising nitrogen can be, optionally, substituted by one or two C<sub>1</sub>-C<sub>8</sub>-alkyl groups.

See Claim 1.

The claimed process is not obvious in view of the combination of Brach et al. and Tamura et al. or those references taken in combination with Paidi et al. and Rintelman et al.

The obviousness rejection of Claims 1-8 and 11-17 as being unpatentable in view of Brach et al. and Tamura et al. is improper because there is no motivation to combine the references as the Office has attempted to do, because Tamura et al. teach away from combining the references as the Office has attempted, and because the Office has relied on impermissible hindsight in combining the references.

Brach et al. is drawn to a process for preparing metal-free phthalocyanines by, for example, heating phthalonitrile and ammonia in an organic solvent (see, for example, Method A, page 1404, of Brach et al.). Brach et al.'s process was applied to unsubstituted

phthalonitriles and phthalonitriles with small substituents (see, Table II, page 1404, of Brach).

Tamura describes a process for preparing metal-free phthalocyanines by heating:

a) phthalonitrile, b) an alkali metal or an alkali metal compound, c) a hydrogen donor compound, and d) an organic solvent, to obtain a partially hydrogenated alkali metal phthalocyanine, which is then subsequently e) brought into contact with a dealkalizing agent (see, for example, the Abstract of Tamura).

Component e), the dealkalizing agent, is a necessary component in the process of Tamura and thus, may not be dispensed with in order to obtain Tamura et al.'s metal free phthalocyanine (see, for example, page 8, lines 4-6, of Tamura et al.).

Thus, a person of ordinary skill in the art would understand that Tamura et al. requires the combination of components a), b), c), d) and e) if metal-free phthalocyanines are to be obtained. Accordingly, if Tamura et al. were combined with Brach et al., Appellants submit that all required elements of Tamura et al. must be combined with Brach et al., as opposed to merely selecting individual components such as Tamura et al.'s component b). Put another way, there would be no reason why one of ordinary skill in the art would be motivated to combine Brach et al. and Tamura et al. by disregard the teaching of Tamura et al. through dispensing with the dealkalizing agent e), while still including some form of specific hydrogen compound c) and alkali metal source b) into Brach et al.'s process, because Tamura et al. teaches away from doing this. Appellants submit that the Office's combining of Brach et al. and Tamura et al. is based on impermissible hindsight.

The disclosure of Paidi et al. does not remedy the deficiency of the Office's attempt to combine Brach et al. and Tamura et al. Rather, the reference has been cited for a disclosure of ruthenium phthalocyanines that contain 6-membered heterocycles.

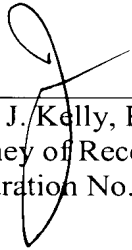
Further, Appellants submit it is well known to a person of ordinary skill in the art that the synthesis of metal-free phthalocyanins is often different from the synthesis of metal containing phthalocyanins. Paidi et al., for example, is concerned with ruthenium phthalocyanines. Tamura et al. is concerned with metal-free phthalocyanines. Thus, any attempt to combine the teaching of Paidi et al. and Tamura et al. is problematic.

Rintelman et al. does not remedy the deficiencies of the references discussed above. Rather, the reference relates to preparing metal-free phthalocyanines using an orthoarylene diicyanide in an organic solvent and in the presence of piperidine and a pipercolin and further in the presence of a glycol and alkali metal carbonate.

In view of the foregoing, the rejections of the claims should be reversed.

Respectfully Submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER, & NEUSTADT, P.C.



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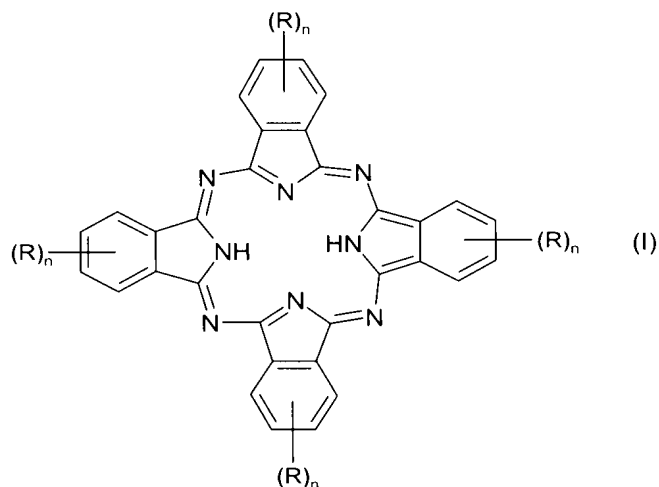
James J. Kelly, Ph.D.  
Attorney of Record  
Registration No.: 41,504

Customer Number  
**22850**

Tel.: (703) 413-3000  
Fax: (703) 413-2220

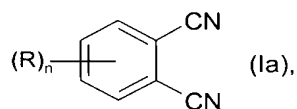
CLAIMS APPENDIX

Claim 1: A process for the preparation of a metal-free phthalocyanine of formula I



the process comprising,

converting an ortho-phthalodinitrile of the formula Ia



to the metal-free phthalocyanine of formula I in an inert solvent with a boiling point of at least 120°C (at standard pressure) in the presence of ammonia and an alkali metal hydroxide,

wherein, in formula I or Ia, the variable n can adopt values of 1, 2, 3 or 4,

wherein in formula I or Ia, the R radicals denote a five- or six-membered saturated heterocyclic ring comprising nitrogen,

wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen is bonded



via a ring nitrogen atom to the benzene ring,

wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen can, optionally, comprise one or two additional nitrogen atoms or an additional oxygen or sulfur atom, and

wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen can be, optionally, substituted by one or two C<sub>1</sub>-C<sub>8</sub>-alkyl groups.

Claim 2: The process according to claim 1, wherein the inert solvent is selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol, 1,2-butanediol, 1,3-butanediol, 1,4-butanediol, 2,3-butanediol, mono- (C<sub>1</sub>-C<sub>4</sub>-alkyl) ethers of the abovementioned diols, di-(C<sub>1</sub>-C<sub>4</sub>-alkyl) ethers of the abovementioned diols, 2-[di(C<sub>1</sub>-C<sub>4</sub>-alkyl)amino]ethanol and 3-[di(C<sub>1</sub>-C<sub>4</sub>-alkyl)amino]propanol.

Claim 3: The process according to claim 1, wherein the inert solvent is selected from the group consisting of 3-dimethylaminopropanol and n-butyl glycol.

Claim 4: The process according to claim 1, wherein the alkali metal hydroxide is selected from the group consisting of sodium hydroxide, potassium hydroxide, and combinations thereof.

Claim 5: The process according to claim 1, wherein n in the formulae I and Ia adopts the value 1.

Claim 6: The process according to claim 1, wherein the R radicals denote a six-membered saturated heterocyclic ring comprising nitrogen,

wherein the six-membered saturated heterocyclic ring comprising nitrogen is substituted by one or two C<sub>1</sub>-C<sub>4</sub>-alkyl groups, and

wherein, optionally, the six-membered saturated heterocyclic ring comprising nitrogen can comprise an additional nitrogen atom.

Claim 7: The process according to claim 6, wherein the R radicals denote a piperidine or piperazine ring substituted by one or two C<sub>1</sub>-C<sub>4</sub>-alkyl groups, wherein the piperidine or piperazine ring is bonded to the benzene ring via a ring nitrogen atom of the piperidine or piperazine ring.

Claim 8: The process of claim 1, further comprising an alkali metal carbonate.

Claim 9: The process of claim 8, wherein the alkali metal carbonate is selected from the group consisting of sodium carbonate, potassium carbonate, and mixtures thereof.

Claim 10: The process of claim 1, wherein the process is carried out at a temperature of from 140 °C to 170 °C.

Claim 11: The process of claim 1, wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen is substituted by one or two C<sub>1</sub>-C<sub>8</sub>-alkyl groups.

Claim 12: The process of claim 1, wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen is a five-membered saturated heterocyclic ring.

Claim 13: The process of claim 1, wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen is a six-membered saturated cyclic heterocyclic ring.

Claim 14: The process of claim 1, wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen further comprises one additional nitrogen atom.

Claim 15: The process of claim 1, wherein the five-or six-membered saturated heterocyclic ring comprising nitrogen further comprises two additional nitrogen atoms.

Claim 16: The process of claim 1, wherein the five-or six-membered saturated heterocyclic ring comprising nitrogen further comprises an oxygen atom.

Claim 17: The process of claim 1, wherein the five-or six-membered saturated heterocyclic ring comprising nitrogen further comprises a sulfur atom.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.